

Assessment

Chapter Test B**The Science of Life**

In the space provided, write the letter of the description that best matches the term or phrase.

- | | |
|------------------------|---|
| _____ 1. metabolism | a. structure made of tissues |
| _____ 2. magnification | b. produces greatly magnified images of surface details |
| _____ 3. cell | c. increase of an object's apparent size |
| _____ 4. reproduction | d. production of offspring |
| _____ 5. resolution | e. produces a greatly magnified image of internal detail |
| _____ 6. TEM | f. sum of all chemical processes of an organism |
| _____ 7. organ | g. capability of showing clear details |
| _____ 8. SEM | h. smallest unit of life that can carry out all life's processes |

Complete each statement by writing the correct term or phrase in the space provided.

9. A scientist collects data to test a(n) _____ .
10. Growth in living things occurs by cell _____ and cell _____ .
11. A disadvantage of a(n) _____ microscope is that living specimens cannot be examined.
12. _____ is the increase in an object's apparent size, whereas _____ is the ability to show details clearly in an image.
13. _____ are those that are produced by the relationship between two base units or between two derived units.

The Science of Life, Chapter Test B *continued*

In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.

- _____ **14.** To maintain their internal organization, all living things must have a constant supply of
a. oxygen. **c.** water.
b. carbon dioxide. **d.** energy.
- _____ **15.** Reproduction involves the transfer of genetic information from
a. genes to DNA.
b. parents to offspring.
c. offspring to parents.
d. unicellular organisms to multicellular organisms.
- _____ **16.** The stable internal environment maintained by living things is called
a. homeostasis. **c.** adaptation.
b. differentiation. **d.** interdependence.
- _____ **17.** The most important driving force in evolution is
a. natural selection. **c.** autotrophy.
b. heterotrophy. **d.** asexual reproduction.
- _____ **18.** The scientific process that involves using the five senses is
a. inference. **c.** modeling.
b. analyzing. **d.** observation.
- _____ **19.** Data that are quantitative are always
a. described in words.
b. represented by numbers.
c. duplicated for verification.
d. the most accurate kind of data.
- _____ **20.** A hypothesis is a statement that
a. is always true. **c.** is the same as a theory.
b. is usually true. **d.** can be tested.
- _____ **21.** A broad and comprehensive statement of what is believed to be true is a(n)
a. model. **c.** prediction.
b. theory. **d.** inference.
- _____ **22.** The safety symbol for eye safety is a picture of
a. a hand. **c.** an electrical plug.
b. a flame. **d.** goggles.
- _____ **23.** Two parents are required for the type of reproduction known as
a. asexual reproduction. **c.** sexual reproduction.
b. binary fission. **d.** cell differentiation.

The Science of Life, Chapter Test B *continued*

Read each question, and write your answer in the space provided.

24. List three major themes of biology.

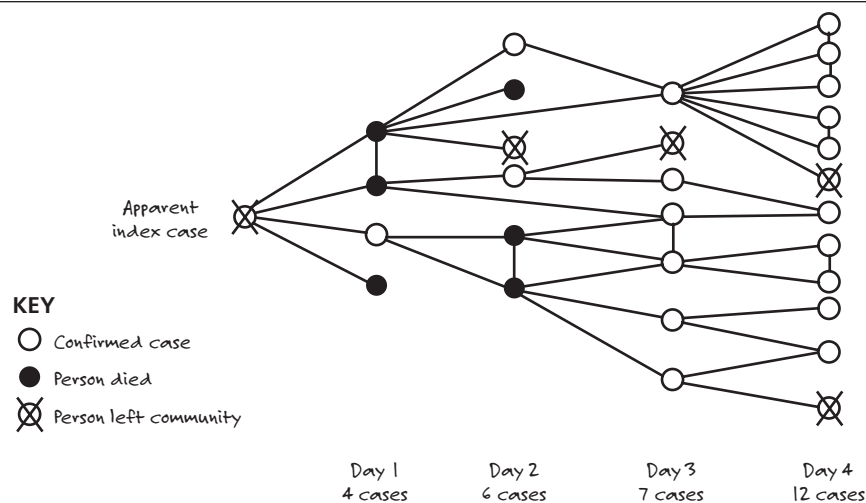
25. List seven major characteristics of life.

26. Would a field biologist who studies the ecology of a bird species necessarily use the same scientific methods as a laboratory biologist who studies how a virus infects cells? Why or why not?

27. Why is it important for scientists to communicate about their work, and what are two common ways that they do so?

28. Why do scientists use SI (Système International d'Unités) rather than the system of measurement adopted for use in their own country?

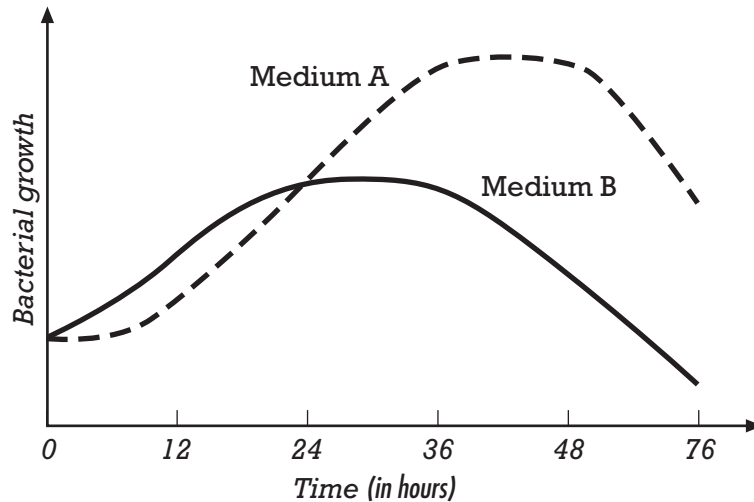
29. Which step in the scientific methods does the chart below represent?



The Science of Life, Chapter Test B *continued*

Follow the directions given below.

- 30.** A microbiologist tested the rate of reproduction (called growth) of a bacterial species in two kinds of bacterial food (called media). The data were organized on the graph below. Analyze the data, and answer questions a–e.



- a.** At what time was the growth rate equal for the bacteria in both media?

- b.** Which medium produced the most rapid growth initially?

- c.** Which medium produced the most growth overall?

- d.** What does the descending part of the curves represent? What may have caused this effect?

- e.** What can you predict about the results of a similar experiment run for one week?

Answer Key

The Science of Life Chapter Test A (General)

1. c
2. g
3. e
4. h
5. a
6. d
7. b
8. f
9. c
10. c
11. d
12. b
13. a
14. cell
15. tissues, organs, organ systems
16. homeostasis
17. reproduction
18. closely
19. evolution
20. stimulus
21. metabolism
22. Scientists can use information in an article in a scientific publication to develop or modify their own hypotheses. They can also use the information to repeat the experiments and confirm the author's results. Science journals provide a means of communication for scientists all over the world.
23. A knowledge of biology is important so that you can make informed personal decisions about your health, your environment, and the way you live. Pollution, new technologies, the world's food supplies, and curing diseases are all problems that affect human society. It is important to be scientifically informed about these issues.
24. Because all living things need energy to grow, move, and interpret information, there must be a mechanism by which organisms obtain this energy and use it. Metabolism is the sum of all the chemical reactions an organism uses to carry out life.
25. Because no organism lives forever, reproduction ensures the continuation of a species. If organisms did not reproduce, their species would soon disappear.

The Science of Life Chapter Test B (Advanced)

1. f
2. c
3. h
4. d
5. g
6. e
7. a
8. b
9. hypothesis
10. division, enlargement
11. electron
12. Magnification, resolution
13. Derived units
14. d
15. b
16. a
17. a
18. d
19. b
20. d
21. b
22. d
23. c
24. diversity and unity of life; interdependence of organisms; evolution of life
25. organization and cells; response to stimuli; homeostasis; metabolism; growth and development; reproduction; change through time
26. No; scientists use scientific methods in a way that is best suited to answer the questions they ask.
27. Communication allows scientists to build on the work of other scientists. Scientists publish their findings in journals or present them at conferences.
28. The SI is a universal, standardized form of measurement that allows scientists to compare results.
29. organizing and analyzing collected data

30. (a) about 24 hours (b) Medium B
(c) Medium A (d) The descending part of the curves represents a decline in the growth rate over time because of the depletion of nutrient media.
(e) The growth rate should eventually reach zero for the bacteria in both media.

Chemistry of Life Chapter Test A (General)

- | | |
|-------|-------|
| 1. a | 12. f |
| 2. a | 13. a |
| 3. a | 14. e |
| 4. d | 15. h |
| 5. b | 16. b |
| 6. d | 17. d |
| 7. d | 18. c |
| 8. d | 19. g |
| 9. c | |
| 10. b | |
| 11. c | |
20. polar, nonpolar
21. hydrogen, covalent
22. water
23. hydronium
24. sodium ions, chloride ions
25. catalyst

Chemistry of Life Chapter Test B (Advanced)

- | | |
|-------|-------|
| 1. d | 12. a |
| 2. g | 13. a |
| 3. f | 14. b |
| 4. e | 15. b |
| 5. h | 16. a |
| 6. a | 17. d |
| 7. b | 18. b |
| 8. c | 19. a |
| 9. a | 20. d |
| 10. c | 21. d |
| 11. d | 22. a |
| | 23. c |
24. In redox reactions, electrons are transferred between atoms, so the reactions always occur together.
25. In living things, enzymes act as catalysts to speed up chemical reactions.
26. A solute is the substance that is dissolved in a solution. A solvent is the substance in which the solute

is dissolved. The concentration is the amount of solute in a fixed amount of the solution.

27. Acids have a sour taste and are highly corrosive in concentrated forms. Bases have a bitter taste and tend to feel slippery.
28. The pH scale is a system of comparing the relative concentrations of hydronium ions and hydroxide ions in a solution. Its values range from 0 to 14,

with values less than 7 denoting acidity and those greater than 7 denoting alkalinity.

29. atomic mass: 14; atomic number: 6
30. (a) pepsin (b) trypsin (c) The liquid must become alkaline. (d) According to the graph, enzymes function best at certain pH levels. (e) No; according to the graph, a low pH is required for pepsin to function, and a high pH is required for trypsin to function.

Biochemistry Chapter Test A (General)

- | | |
|-------|-------|
| 1. c | 11. e |
| 2. c | 12. h |
| 3. a | 13. c |
| 4. b | 14. b |
| 5. c | 15. f |
| 6. a | 16. d |
| 7. c | 17. g |
| 8. d | 18. j |
| 9. b | 19. a |
| 10. i | |
20. A—carbohydrate; B—lipid; C—protein
21. Carbohydrates such as the monosaccharide glucose shown here are found in cells as a source of energy (glucose), as energy storage molecules (glycogen and starch), or as structural molecules (cellulose). Lipids such as the fatty acid shown here are found in cells as energy storage molecules (fats) or in cell membranes as structural molecules (phospholipids). Proteins are found in cells as enzymes and structural proteins in the body (hair, muscles).